Florida's Mobility Performance Measures Program

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Why Does Florida Need Performance Measures?

Citizens, elected officials, policy makers and transportation professionals in Florida are seeking new ways of measuring the performance of the transportation system to answer the following questions:

- How do we improve transportation to serve people and commerce in Florida?
- What are we getting from our investment in transportation?
- Are we investing in transportation as efficiently as possible?

Mobility performance measures are needed to answer these questions and to track performance over time. They also provide accountability and link strategic planning to resource allocation. By defining specific measures, the Florida Department of Transportation is able to measure the effectiveness of programs in meeting Department objectives.

Principles of Florida's Mobility Performance Measures Program

Florida's mobility performance measures are tied to the goals and objectives established in the Florida Transportation Plan. The plan emphasizes four key areas: safety, mobility, economic prosperity and preservation.

Following a review of national research, Florida's Mobility Performance Measures Program is based on the following principles:

- The program builds on national research.
- The process is policy-driven and supported by data.
- The measures reflect the users' experience on the system.
- The measures address multimodal considerations.
- The results are understandable to the general public.
- The results can be forecast into the future.

Which Mobility Performance Measures Are Used in Florida?

Mobility is defined as ***"the ease with which people and goods move throughout their community, state and world."*** This definition emphasizes mobility from the user perspective.

Florida's mobility performance measures describe the following dimensions of mobility:

- Quantity of travel - Reflects the magnitude of the use of a facility or service.
- Quality of travel - Describes travel conditions and the effects of congestion.
- Accessibility - Describes the ease with which people can connect to the multimodal transportation system.
- Utilization - Indicates whether or not a transportation system is properly sized and has the ability to accommodate growth.

A summary of the Department's mobility performance measures for highways is provided in Table 1. A summary of the mobility performance measures for transit is provided in Table 2.

Table 1. Mobility Performance Measures for Highways

Dimension of Mobility	Mobility Performance Measures	State Highway System	Florida Intrastate Highway System	Florida Intrastate Highway System Corridors	Metropolitan Highway Systems	Definitions[1]
Quantity of Travel	Person miles traveled	●	●	●	●	AADT * length * vehicle occupancy
	Truck miles traveled	●	●	●	●	AADT * length * % trucks
	Vehicle miles traveled	●	●	●	●	AADT * length
	Person trips				●	Total person trips
Quality of Travel	Average speed	●	●	●		Average speed[2] weighted by PMT
	Delay	●	●	●	●	Average delay
	Average travel time			●		Distance / speed[2]
	Average trip time				●	Door to door trip travel time
	Reliability			●	●	% of travel times that are acceptable
	Maneuverability			●		Vehicles per hour per lane
Accessibility	Connectivity to intermodal facilities	●	●	●	●	% within 5 miles (1 mile for metropolitan)
	Dwelling unit proximity		●	●	●	% within 5 miles (1 mile for metropolitan)
	Employment proximity		●	●	●	% within 5 miles (1 mile for metropolitan)
	Industrial/warehouse facility proximity		●			% within 5 miles
	% miles bicycle accommodations	●			●	% miles with bike lane/shoulder coverage
	% miles pedestrian accommodations	●			●	% miles with sidewalk coverage
Utilization	% system heavily congested	●	●	●	●	% miles at LOS E or F
	% travel heavily congested	●	●	●	●	% daily VMT at LOS E or F
	Vehicles per lane mile	●	●	●	●	AADT * length / lane miles
	Duration of congestion	●	●	●	●	Lane-mile-hours at LOS E or F

[1] Definitions shown are generally for daily analysis. Calculations for the peak are based on prevailing conditions during the typical weekday 5:00 to 6:00 PM peak.

[2] Speed based on models using the HCM or field data.

AADT - annual average daily traffic
PMT - person miles traveled
VMT - vehicle miles traveled
LOS - level of service
HCM - Highway Capacity Manual

Table 2. Mobility Performance Measures for Transit

Dimension of Mobility	Mobility Performance Measure	Definition
Quantity of Travel	Ridership	Total passenger trips
Quality of Travel	Auto / Transit Travel Time Ratio	Door-to-door trip time
	Reliability	On-time performance
Accessibility	Coverage	% person mintues served
	Frequency	Buses per hour
	Span	Hours of service per day
Utilization	Load Factor	% seats occupied

Examples of Mobility Performance Measure Results

Figures 1 through 4 provide examples of the mobility performance measure results for quantity of travel, quality of travel, accessibility and utilization, respectively.

Figure 1. Quantity of Travel (Person Miles, Vehicle Miles and Truck Miles Traveled)

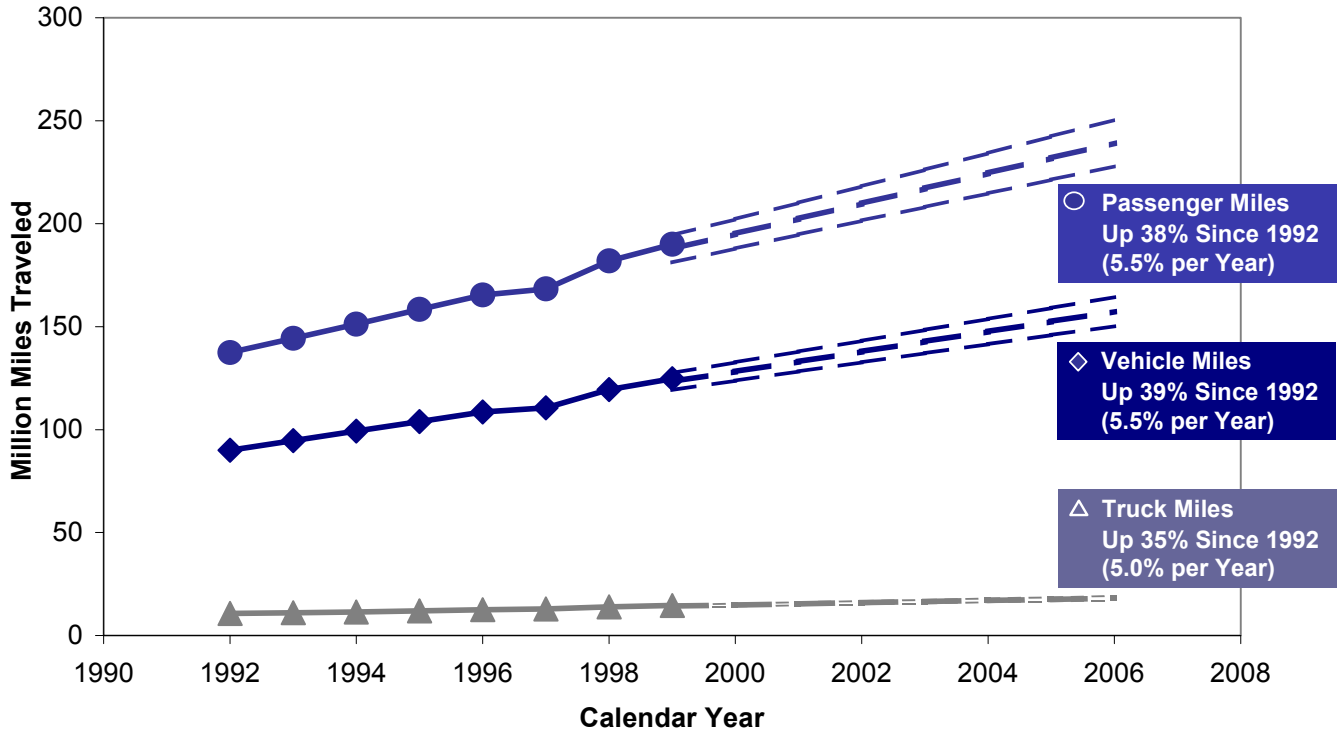


Figure 2. Quality of Travel (Reliability)

Definition of Reliability:

The percent of travel on a corridor which takes less than the acceptable travel time.

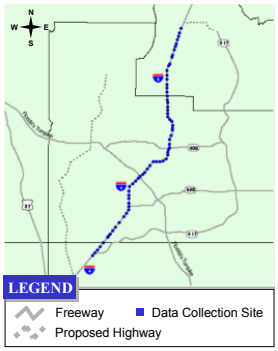
Calculation of Acceptable Travel Time:

Acceptable Travel Time = $\bar{x} + \triangle$

$\bar{x}$ is the expected (median) travel time; and

$\triangle$ is the acceptable additional travel time, currently a fixed percentage of the expected travel time (5%, 10%, 15% or 20%). Preference surveys are planned.

Reliability Results for the I-4 Corridor in Orlando:



Summary of Results (5 to 6 PM)	NB	SB
Expected Travel Time (min)	43.1	37.6
Reliability @ 5% Delta	68%	57%
Reliability @ 10% Delta	78%	64%
Reliability @ 15% Delta	85%	78%
Reliability @ 20% Delta	86%	83%

Based on a 6 week sample (Jan. 3 - Feb. 11, 2000). Traffic data were obtained from 70 inductive loop sensors that support ITS along this corridor.

Figure 3. Accessibility (Connectivity to Intermodal Facilities)

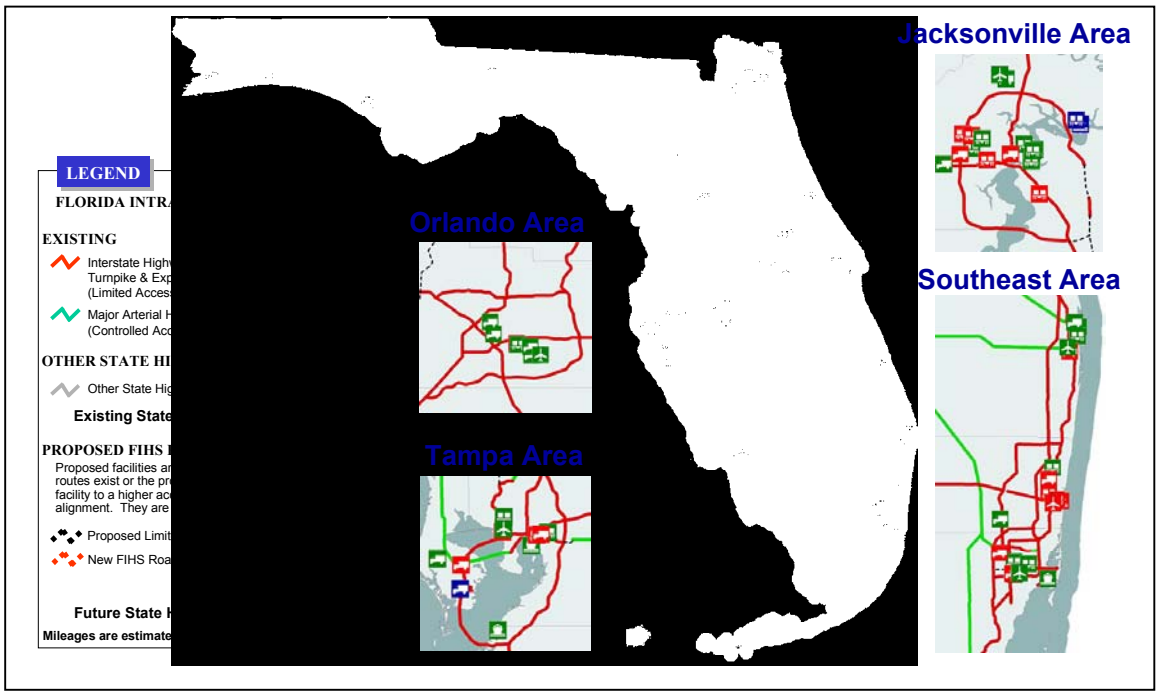
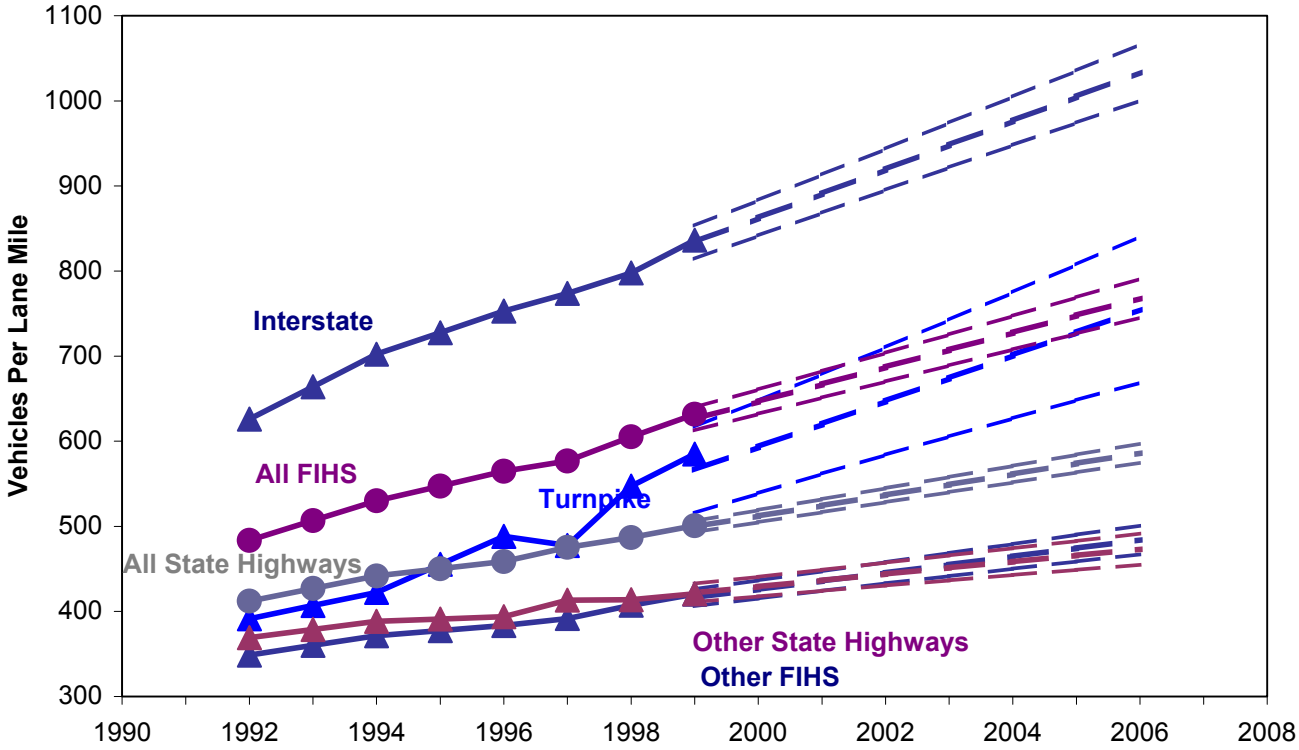


Figure 4. Utilization (Vehicles Per Lane Mile)



Future Directions

Florida is continuing to refine its Mobility Performance Measures Program, and future directions include the following:

- Incorporation of person trip based measures,
- Development of dynamic display systems for the measures,
- Refinement and reporting of the reliability measure,
- Reporting of measures at the corridor level, and
- Incorporation of ITS data and analyses.